
IN THE SENATE OF THE UNITED STATES.

LETTER

FROM

THE SECRETARY OF THE NAVY,

IN REPLY TO

Senate resolution of January 28, 1895, transmitting information in regard to the prices paid for armor plate for the vessels of the Navy, and the prices paid for armor plate by other nations.

FEBRUARY 5, 1895.—Referred to the Committee on Naval Affairs and ordered to be printed.

NAVY DEPARTMENT,
Washington, February 4, 1895.

SIR: In compliance with the resolution of the Senate, dated the 28th ultimo, directing the Secretary of the Navy to transmit a statement showing the prices paid per ton for armor plates for vessels of the Navy, comparing the same with the prices paid by other nations, and also with the prices paid or to be paid under recent contracts to American manufacturers for armor plates for other nations, I have the honor to transmit herewith a statement prepared by the Chief of the Bureau of Ordnance, which statement contains all the information afforded by the records and files of this Department on the subjects covered by the resolution.

I have had some conversation with representatives of the Bethlehem Iron Company respecting its recent contract with the Russian Government, but am unable to state at what prices the armor to which that contract relates is to be furnished.

Very respectfully,

H. A. HERBERT, *Secretary.*

The PRESIDENT OF THE UNITED STATES SENATE.

DEPARTMENT OF THE NAVY,
BUREAU OF ORDNANCE,
Washington, D. C., February 1, 1895.

SIR: In compliance with the Senate resolution requesting information as to the prices paid for armor plates for vessels of the Navy, comparing the same with the prices paid by other nations, with special

reference to the prices to be paid under recent contracts to American manufacturers, the following statement is submitted:

The first armor contract which was made with the Bethlehem Iron Company on June 1, 1887, was for 6,702.6 tons of simple steel armor. It was graded into exhibits varying in price from \$490 to \$600 a ton, according to the difficulty of manufacture.

The Report of the Secretary of the Navy for 1887 contains the following in relation to this contract:

The contracts for armor and gun steel are made at prices within 25 per cent of the European price for the similar material, not greater than the difference in labor between the two countries, notwithstanding the heavy outlay for plant (estimated at \$2,500,000) necessary to be made to undertake the contract.

The prices agreed upon for the armor and its appurtenances, bolts, etc., averaged \$538.76 a ton.

The first delivery under this contract was made in August, 1891. In the meantime, on November 20, 1890, a contract was made on the same basis with the Carnegie Steel Company for 6,000 tons of simple steel armor, the first delivery of which was made in January, 1892. Upon the decision of the Department to adopt nickel steel armor an additional compensation of \$11.20 per ton was paid the armor contractors to cover the cost of the introduction of the nickel and the increased difficulty of machining. The nickel was furnished by the Government.

On February 28, 1893, a contract was made with the Carnegie Steel Company for 2,927.29 tons of nickel steel armor, and on March 1, 1893, a similar contract was made with the Bethlehem Iron Company for 3,562.24 tons of nickel steel armor.

The armor in these later contracts was likewise graded into exhibits, those similar to the exhibits of the first contracts ranging in price from \$500 to \$575 a ton, including the cost of the introduction of nickel. Two new exhibits of special difficulty of manufacture were created, one of 101.5 tons at \$725 a ton, and one of 122.5 tons at \$600 a ton.

A separate contract was later made in which the armor makers agreed to apply the Harvey process at a charge of \$50.40 per ton for plates of and above 8 inches thickness; \$78.40 per ton for plates 5 to 8 inches thick; \$100.80 per ton for plates under 5 inches thick. In addition, the Harvey Steel Company was paid a royalty of \$11.50 a ton.

The price for the principal part of nickel steel armor for vessels of the Navy under contracts signed two years ago is therefore as follows:

Ordinary	\$500.00 to \$575.00
Special	600.00 to 725.00
Cost of Harvey process.....	61.60

The prices paid abroad for armor can not be positively stated. The information which the Department possesses comes from a variety of sources, newspaper clippings, conversations, and confidential statements. All of these lack the official confirmation only conveyed in a properly executed contract, such as that to which the Department was a party in the purchase of compound armor for the *Miantonomoh*. The average cost of that armor was \$535 a ton, and was purchased from Sheffield, England.

It must be further remembered that foreign armor contractors furnish various grades of armor at different prices. In France, for example, under recent contracts, three different prices are paid for the same exhibit of armor, according to its quality. In the United States the contracts stipulate that the manufacturer shall make the most resisting and enduring armor that he can; he must furnish and maintain the

most improved modern plant; finally, the requirements for acceptance are now in many respects far more severe than those abroad.

The nickel-steel armor made in this country contains 3.25 per cent nickel; that made abroad contains from 2 to 2.5 per cent. It follows that not only is the actual cost of the nickel 40 per cent less, but the manufacture is less expensive, so far as the greater ease of machining is concerned. In England very little nickel-steel armor is made.

The following table of prices of armor is submitted, with full reservation as to the accuracy of those asked by foreign makers:

Price of armor in the United States and abroad, 1894.

Grade.	United States.			England.			France.		
	Plain.	Nickel.	Harvey-ized.	Plain.	Nickel.	Harveyized.	Plain.	Nickel.	Harvey-ized.
Lower limit	490	500	561.60	1 413	.....	Said to be 88 more than for plain steel; hence \$501 to \$526. 6 307-341	.....	2 444	3 521
Upper limit	600	575	636.60	1 438	.....		.....	2 463	3 540
Special	600-725	
Foreign trade .....	.....	.....	.....	4 312	5 358	.....	7 312	8 311.46	389.32

¹ Vickers, makers for H. M. S. *Centurion*.

² Acier special for the *Bouvet*.

³ For the *Charlemagne* and *St. Louis*.

⁴ Vicker's bid.

⁵ Cammell's bid for armor of Russian *Three Saints*.

⁶ Cammell's bid.

⁷ Le Creuzot bid.

⁸ Le Creuzot bid for Russian *Three Saints*.

The Department has no information as to the prices to be paid American manufacturers under recent contracts for armor plates for other nations. It will be observed, however, that the bids of English and French manufacturers for the foreign trade is far below the prices paid them for armor intended for ships of their own nationality. This is susceptible of various explanations, the most natural of which, is that the quality of the armor manufactured for foreign navies is inferior to that made for their own. The requirements for acceptance are not so severe, and the inspection is less thorough and exacting. Another reason, and one which may have impelled the Bethlehem Iron Company to acquire its recent contract even at a serious loss, is that a far greater loss would be experienced if it was found necessary to break up the organization, disperse the skilled labor, and close the works through lack of orders.

Respectfully,

W. F. SAMPSON,
Chief of Bureau of Ordnance.

The SECRETARY OF THE NAVY.



